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diluvial age. At that time middle Europe was a land of steppes, and a strong-kneed, thick headed, medium-sized wild horse existed there. Later on the steppe became covered with forest, the moist climate of which was unfavorable to the horse, which became confined to the pasture grounds and thus fell more and more under the influence of domestication, whilst it degenerated into the small weak-kneed horse found in the moors of Northern Germany, in some pile-dwellings, and in the "Kreisgruben" of Oldenburg. The descendants of this European horse can still be traced in some breeds. This view does not shut out the idea that the introduction of the Asiatic horse may have contributed to the change of type.

Recent.—Dr. R. v. Lendenfeld has found undoubted traces of glaciation throughout an area of 100 sq. miles upon the highest part of the Australian Alps, at elevations of above 5800 feet. The rocks showing traces of ice-action are all granite.

MINERALOGY AND PETROGRAPHY.[1]

TESCHNITE.—Dr. Carl Rohrbach[2] has made a thorough reëxamination of all the occurrences of teschnite of which he could obtain specimens, and concludes that this rock is not entitled to the position to which it was assigned by Rosenbusch in his system of rock classification published in 1877.

The paper opens with a valuable review of the literature of this much discussed rock-type. The best known localities are those in the neighborhood of Teschen, in Moravia, where the rock, as early as 1821, was described as a diorite. This determination appears to have been regarded as satisfactory until Hohenegger threw doubt on it, and in 1861 proposed to call this in many respects peculiar group of rocks "teschnite." This name was accepted by Tschermak, in 1866, for the lighter colored varieties, while he designated the darker ones as picrite. Zirkel, in 1868, and Tschermak, in 1869, first mentioned nepheline as a constituent of these rocks. In 1877 Rosenbusch published the results of his examination of these rocks, which he defined as pre-Tertiary plagioclase-nepheline aggregates, and as such assigned them a very important place in his classification. Other masses of a similar age and mineralogical composition have been described by Tschermak from the Caucasus, and by McPherson in Portugal. Analcite, supposed to be an alteration of the nepheline, is a common constituent at all of these localities.

As the principal primary constituents Dr. Rohrbach designates plagioclase, augite, hornblende, biotite, olivine, magnetite and apatite. The augite is called "automorphous" when it is present in well defined crystals, and "xenomorphous" when it merely fills the spaces left between the plagioclase crystals, as is common in rocks of the diabase type. A compact brown hornblende is a common constituent and presents the most interesting relations to the augite. These are described at length and admirably illustrated in a colored plate. This hornblende which very frequently makes up the outer portion of a pyroxene crystal, is regarded as in no way of secondary origin, but as an original crystallization due either to changes in chemical composition or physical conditions in the magma. The following analyses of the two minerals illustrate instructive chemical differences:

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[1] Edited by Dr. GEO. H. WILLIAMS, of the Johns Hopkins Univ., Baltimore, Md.

[2] Ueber die Eruptivgesteine im Gebiet der schlesisch-mährischen Kreideformation. Tschermak's Min. u. Petr. Mitth., VII, pp. 1–63.

	Augite.	*Hornblende.*
SiO_2	44.22	36.91
Al_2O_3	10.49	16.30
Fe_2O_3	11.98	5.28
FeO	5.77	12.27
MgO	7.02	8.83
CaO	22.54	16.91
	102.02	96.50

The hornblende contains 3.5 per cent of alkalies.

The nepheline Dr. Rohrbach was unable to discover in any specimens of teschnite from either Moravia, Caucasus or Portugal. He thinks that what has thus far been considered to belong to this species is in reality apatite, and would hence strike teschnite from its place in Rosenbusch's system.

[Even in case Dr. Rohrbach's results regarding the presence of nepheline in the specimens examined by him are entirely correct, no account has been taken of the dykes of ancient plagioclase rocks occurring in the Silurian limestone near Montreal, in Canada, which, according to Drs. Hawes and Harrington, are undoubtedly rich in nepheline. This mineral is often present in large sharply-defined hexagonal crystals closely resembling those so characteristic of the Katzenbuckel "nephelinite."—*G. H. W.*].

METAMORPHOSIS OF GABBRO.—The widespread origin of hornblendic schists by the uralitic alteration of massive pyroxene rocks receives additional evidence in its favor wherever the attention of geologists is especially directed to it. The observations of Lehmann in Saxony, Reusch in Norway, Phillips in England, Becke in Austria, Streng and Irving in the region about Lake Superior in the U. S., all indicate the great geological importance of molecular changes in producing amphibole schists from pyroxene eruptive rocks. The studies of Kloos[1] in the Black Forest point to a like relation between the gabbros and diorites of Ehrsberg. Mr. Frederick H. Hatch, of London, has contributed a similar investigation of the gabbro occurring at Wildschönan in the

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[1] Neues Jahrbuch für Min., etc., III, Beil. Bd.

Tyrol, and of the associated hornblende schists, which he regards as having undoubtedly been derived by its uralitization.[1] Several wood-cuts illustrate the different stages of the alteration as it was observed under the microscope, The writer finds that the schistose structure is developed in the rock in proportion as the alteration of the pyroxene to hornblende has progressed, and is hence inclined to attribute both to the action of great pressure.

Two parallel series of alteration which have gone on in the gabbros of Wildschönau, the writer illustrates in the following manner:

Normal-gabbro

Uralite-gabbro	Hornblende-gabbro ("Gabbro-diorite" of Törnebohm and Williams)
Actinolite or nephrite-schist	Amphibolite
Serpentine	Epidote-rock

Petrographical News.—Barrois[2] and Des Cloizeaux[3] have recently made important contributions to our knowledge of the physical characteristics of the minerals of the chloritoid group, which are becoming more and more generally recognized as widely distributed rock constituents. Van Werveke[4] publishes the results of a new microscopical study of a large amount of petrographical material in which this class of minerals plays an important rôle. This consists of the ottrelite schists occurring near Ottré and Viel-Salm in the Ardennes. These he divides into ottrelite-phyllite proper, garnetiferous ottrelite-phyllite, magnetiferous ottrelite-phyllite and ottrelite-bearing quartz-breccia.—— Professor E. Cohen, formerly of Strassburg, who has recently been called to the University of Greifswald, has a letter in the Neues Jahrbuch für Mineralogie,[5] in which he revises the determination of the diallage in the Schriesheim picrite, made by him some twelve years ago. The resemblance of this rock to certain olivine rocks occurring near Peekskill, on the Hudson river, is very striking. In them large bronze-like cleavage surfaces of hornblende are mottled with much smaller grains of olivine and pyroxene. An almost identical mineral occurs in the Schreisheim rock, which was formerly considered by Cohen as diallage, but which now, upon reëxamination, proves to be also hornblende. The writer proposes to call this type of rock, composed essentially of olivine and hornblende, "hudsonite," on account of its being so well developed at Stony point, on the Hudson river. [The name "hudsonite" was applied, as early as 1842, by Beck to a variety of augite occurring near Cornwall, on the Hudson river. It would therefore seem preferable, if a new name is considered necessary, to employ some other than that proposed by Cohen. The present writer has elsewhere suggested "cortlandtite" as appropriate, since this rock is such a typical member of Professor Dana's "Cortlandt Series."—*G. H. W.*]——Dr. K. Oebbeke,[1] of Munich, communicates some observations made by him on a specimen of andesite from the summit of Mt. Tacoma, Washington Territory. The question of the existence of pleochroic augite is again discussed and regarded as undecided in spite of the work of Cross, Hague and Iddings on the western hypersthene-andesites. If the matter is still in doubt it must be confessed that Oebbeke here furnishes but little convincing evidence in favor of a pleochroic monoclinic pyroxene.——R. D. M. Verbeek[2] makes some interesting remarks on the recent lavas of the East Indian archipelago. These are, for the most part, hypersthene-andesites, or, as this writer prefers to call them on account of the presence of both hypersthene and augite, "pyroxene-andesites." The hypersthene is almost always in excess of the augite. Pure augite andesites have not been observed, but such as contain only hypersthene rarely occur. The complementary rôles played by the hypersthene and olivine in these rocks was noticed by Verbeek independently of Hague and Iddings, who discovered and described the same in their notes on the hypersthene andesite and basalt of the Western U. S. in 1883.——Mr. G. P. Merrill,[3] of the U. S. National Museum, has published some notes on the hornblende andesite from the new volcano on Bogosloff island, in Behring sea. They are quite normal in appearance, containing lath-shaped plagioclase crystals, brown hornblende and green augite imbedded in a microlitic base. Two varieties are distinguished, one light colored with fifty-six per cent of silica and the other much darker with fifty-one and a half per cent.

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[1] Ueber den Gabbro aus der Wildschönau in Tirol und die aus ihm hervorgehenden schiefrigen Gesteine. Tschermak's Min. und Petrog. Mitth., VII, 1885, pp. 75–87.

[2] Bull. soc. min. de France, VII, p. 37, 1884.

[3] Bull. soc. min. de France, VII, p. 80, 1884.

[4] Neues Jahrbuch für Min., etc., 1885, I, pp. 227–235.

[5] 1885, I, p. 242.

BOTANY.[4]

BOTANICAL WORK OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—The Ann Arbor meeting of the association, just closed, proved of more than usual interest to the botanists. There was a notable increase in the permanent value of the papers. They were much more thoughtful, as a rule, than

[1] Neues Jahrbuch für Min., etc., 1885, I, p. 222.

[2] Neues Jahrbuch für Min., etc., 1885, I, p. 243.

[3] Proceedings of the U. S. National Museum, Vol. VIII, 1885, p. 31.

[4] Edited by PROFESSOR CHARLES E. BESSEY, Lincoln, Nebraska.